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phase-shifted structure in the optical waveguide direction is interposed between the lower cladding layer and the active layer or between the second upper cladding layer and the active layer. The length  $L$  of the diffraction grating layer in the direction of the optical waveguide is  $L \leq 260 \mu\text{m}$ ; a mean coupling factor  $\kappa$  of a diffraction grating layer is  $\kappa \geq 150 \text{ cm}^{-1}$ ; and  $\kappa L$  satisfies  $5.6 > \kappa L > 3.0$ .

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